REMARKS

Claims 1, 4-18, and 21-36 are pending in the present application. Claims 1, 4, 11, 18, 21, 28, 35, and 36 stand rejected under 35 U.S.C. § 102(b), and claims 5-10, 12-17, 22-27, and 29-34 stand rejected under 35 U.S.C. § 103(a).

In the above amendments, claim 33 has been amended to correct a typographical error. This amendment is not intended to change the scope of claim 33.

As will be explained in the remarks below, Applicant respectfully submits that all pending claims are allowable. Reconsideration and withdrawal of the above claim rejections are respectfully requested.

I. Claims 1, 4, 11, 18, 21, 28, 35, and 36 Rejected Under 35 U.S.C. § 102(b)

Claims 1, 4, 11, 18, 21, 28, 35, and 36 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2002/0154616 to Aoyama (hereinafter, "Aoyama"). Applicant respectfully traverses.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131 (citing Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). "The identical invention must be shown in as complete detail as is contained in the ... claim." Id. (citing Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). In addition, "the reference must be enabling and describe the applicant's claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention." In re Paulsen, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994).

Claim 1 is directed to a "base station that adaptively allocates at least one resource between a traffic signal and a dedicated reference signal." Claim 1 recites "means for receiving a quality metric from a remote station," and "means for using the quality metric to adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal." Applicant respectfully submits that Aoyama does not disclose this claimed subject matter.

Aoyama states the following:

> It is an object of the present invention to provide a base station apparatus, communication terminal apparatus, and communication method that

> enable data-part reception quality to be maintained even when phase changes are sudden with HDR.
>
> This object is achieved by transmitting a dedicated pilot signal using one of the codes used for data transmission when data is transmitted from a base station apparatus to a specific communication terminal using a plurality of spreading codes.

Aoyama, paragraphs [0013]-[0014].

Figure 12 of Aoyama "show[s] the configuration of a base station apparatus 800." Aoyama, paragraph [0140]. The "base station apparatus 800" includes a "reception level measurement section 801 … for each communication terminal apparatus with which radio communication is performed." Id., paragraph [0144]. Aoyama states:

> Each reception level measurement section 801 measures the reception level from a signal spread by a despreading section 104, and determines the state of the propagation environment. The reception level measurement section 801 then outputs a signal indicating the state of the propagation environment for the communication terminal apparatus to which data is to be transmitted….

Id.

The "base station apparatus 800" also includes a "power ratio controller 802." Aoyama, paragraph [0145]. Aoyama states:

> The power ratio controller 802 controls the transmission power ratio between spread transmit data and a spread dedicated pilot signal in accordance with the state of the propagation environment. For example, when the state of the propagation environment is good, the communication terminal apparatus can perform a path search and channel fluctuation estimation without having a dedicated pilot signal transmitted at high power, and therefore the transmission power of the dedicated pilot signal is weak, and the data transmission power is increased compared with the dedicated pilot signal transmission power.

Id.

Aoyama does not disclose "using the quality metric" that is "receiv[ed] … from a remote station" to "adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal," as recited in claim 1. The Examiner may be asserting that the "signal indicating the state of the propagation environment" in Aoyama corresponds to the "quality metric" recited in claim 1. However, the "signal indicating the state of the propagation environment" does not possess all of the characteristics of the "quality metric" that are set forth

in claim 1. For example, the "signal indicating the state of the propagation environment" in Aoyama does not "indicate[] the quality of a signal transmitted from the base station in a common reference signal and received by the remote station," as recited in claim 1.

Moreover, Aoyama indicates that the "reception level measurement section 801 ... determines the state of the propagation environment." Id., paragraph [0144]. The "reception level measurement section 801" is part of the "base station apparatus 800." See Aoyama, paragraphs [0140]-[0144]; Figure 12. Thus, in Aoyama, it is the "base station apparatus 800" that "determines the state of the propagation environment." This is in direct contrast to claim 1, which recites that the "base station ... receiv[es] a quality metric from a remote station."

The Office Action refers to paragraph [0077] of Aoyama. This portion of Aoyama states:

> Then, in the channel estimation section 208, channel fluctuation is estimated using the common pilot signal and dedicated pilot signal, and in the demodulation section 209, the output signal of despreading section 206 is demodulated taking account of channel fluctuation. Also, the CIR is calculated for the common pilot signal by the CIR measurement section 251, and, based on the CIR, the transmission rate at which communication is possible at the desired quality is calculated by the channel estimation section 352.

Aoyama, paragraph [0077]. Thus, this portion of Aoyama refers to a "CIR," which stands for "Carrier to Interference Ratio." See Aoyama, paragraph [0007]. The Examiner appears to be asserting that the "CIR" is a "quality metric" within the meaning of claim 1. Even if this assertion is correct, Aoyama does not disclose "using the [CIR] to adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal," as recited in claim 1. Claim 1 does not merely recite a "quality metric"; rather, claim 1 recites "means for receiving a quality metric from a remote station" and "means for using the quality metric to adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal." Aoyama does not disclose this claimed subject matter.

In view of the foregoing, Applicant respectfully submits that claim 1 is allowable. Accordingly, Applicant respectfully requests that the rejection of claim 1 be withdrawn.

Claim 4 depends from claim 1. Claims 18 and 35 include subject matter that is similar to the subject matter that was discussed above in relation to claim 1. Claim 21 depends from claim

18. Accordingly, Applicant respectfully requests that the rejection of claims 4, 18, 21, and 35 be withdrawn for at least the same reasons as those presented above in relation to claim 1.

Claim 11 is directed to a "remote station that adaptively allocates at least one resource between a traffic signal and a dedicated reference signal." Claim 11 recites "means for determining a quality metric of the received common reference signal," and "means for transmitting the quality metric to the base station, wherein the base station uses the quality metric to adaptively allocate a fixed amount of power between the dedicated reference signal and the traffic signal." Applicant respectfully submits that Aoyama does not disclose this claimed subject matter.

As indicated above, Aoyama describes a "base station apparatus 800" that includes a "reception level measurement section 801." Aoyama, paragraphs [0140], [0144]. Aoyama states that "[e]ach reception level measurement section 801 ... determines the state of the propagation environment ... [and] outputs a signal indicating the state of the propagation environment...." Id. However, as discussed above, the "signal indicating the state of the propagation environment" in Aoyama is not a "quality metric," because the "signal indicating the state of the propagation environment" in Aoyama does not "indicate[] the quality of a signal transmitted from the base station in a common reference signal and received by the remote station," as recited in claim 11. Moreover, in Aoyama it is the "base station apparatus 800" that "determines the state of the propagation environment." This is in direct contrast to claim 11, which recites that the "remote station ... determin[es] a quality metric of the received common reference signal" and "transmit[s] the quality metric to the base station."

In view of the foregoing, Applicant respectfully submits that claim 11 is allowable. Accordingly, Applicant respectfully requests that the rejection of claim 11 be withdrawn.

Claims 28 and 36 include subject matter that is similar to the subject matter that was discussed above in relation to claim 11. Accordingly, Applicant respectfully requests that the rejection of claims 28 and 36 be withdrawn for at least the same reasons as those presented above in relation to claim 11.

II. Claims 5-6, 12-13, 22-23, and 29-30 Rejected Under 35 U.S.C. § 103(a)

Claims 5-6, 12-13, 22-23, and 29-30 stand rejected under 35 U.S.C. § 103(a) based on Aoyama in view of U.S. Patent Application Publication No. 2003/0123406 to Yavuz et al. (hereinafter, "Yavuz"). Applicant respectfully traverses.

The factual inquiries that are relevant in the determination of obviousness are determining the scope and contents of the prior art, ascertaining the differences between the prior art and the claims in issue, resolving the level of ordinary skill in the art, and evaluating evidence of secondary consideration. KSR Int'l Co. v. Teleflex Inc., 550 U.S. ___, 2007 U.S. LEXIS 4745, at **4-5 (2007) (citing Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18 (1966)). To establish a *prima facie* case of obviousness, the prior art references "must teach or suggest all the claim limitations." M.P.E.P. § 2142. Moreover, the analysis in support of an obviousness rejection "should be made explicit." KSR, 2007 U.S. LEXIS 4745, at **37. "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." Id. (citing In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Claims 5-6 depend from claim 1. Claims 22-23 depend from claim 18, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 1. Accordingly, Applicant respectfully requests that the rejection of claims 5-6 and 22-23 be withdrawn for at least the same reasons as those presented above in relation to claim 1.

Claims 12-13 depend from claim 11. Claims 29-30 depend from claim 28, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 11. Accordingly, Applicant respectfully requests that the rejection of claims 12-13 and 29-30 be withdrawn for at least the same reasons as those presented above in relation to claim 11.

III. Claims 7-8, 14-15, 24-25, and 31-32 Rejected Under 35 U.S.C. § 103(a)

Claims 7-8, 14-15, 24-25, and 31-32 stand rejected under 35 U.S.C. § 103(a) based on Aoyama in view of PCT Application No. WO 02/13448 to Farlow (hereinafter, "Farlow"). Applicant respectfully traverses.

Claims 7-8 depend from claim 1. Claims 24-25 depend from claim 18, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 1. Accordingly, Applicant respectfully requests that the rejection of claims 7-8 and 24-25 be withdrawn for at least the same reasons as those presented above in relation to claim 1.

In addition, Applicant presents the following additional reasons why claims 7 and 24 are allowable. Claim 7 recites "means for transmitting a parameter e_x to the remote station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal." Claim 24 recites that "the transmitter also transmits a parameter e_x to the remote station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal." Applicant respectfully submits that the cited references do not teach or suggest this claimed subject matter.

The Examiner correctly acknowledges that Aoyama does not teach or suggest this claimed subject matter. See Office Action, page 5. However, the Examiner asserts that this claimed subject matter is taught by page 10, lines 20-25 of Farlow. See id. Applicant respectfully disagrees.

The cited portion of Farlow states:

> In one embodiment, command generation module 418 generates commands for a remote unit to establish values for parameters that control the selective insertion of training sequences in at least one subsequent time slot. For example, command generation module 418, in one embodiment, generates values for at least one of a training sequence offset, a training sequence interval, and a training sequence length parameter to control the insertion of training sequences.

Farlow, page 10, lines 20-25. Thus, the cited portion of Farlow refers to "generat[ing] commands for a remote unit to establish values for parameters." However, the "parameters" referred to by Farlow do not "represent[] the portion of the resource allocated to the dedicated reference signal," as recited in claims 7 and 24. Rather, the "parameters" referred to by Farlow "control the selective insertion of training sequences in at least one subsequent time slot." Farlow, page 10, lines 21-22. "[P]arameters" that "control the selective insertion of training sequences" are not the same as a "parameter e_x [that] represents the portion of the resource allocated to the dedicated reference signal," as recited in claims 7 and 24.

The Examiner asserts that "this modification is a necessity [rather] than an inventive step. This is because, the length of the reference signal changes that information has to be informed to the receiver to process the signal." Office Action, page 5. Applicant respectfully disagrees. It is not necessary that the "base station … transmit[s] a parameter e_x to the remote station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal," as recited in claims 7 and 24. For example, as one possible alternative to what is claimed, the base station and the remote station may agree on some implicit rules for determining the parameter e_x.

In view of the foregoing, Applicant respectfully submits that claims 7 and 24 are allowable. Accordingly, Applicant respectfully requests that the rejection of claims 7 and 24 be withdrawn.

Claims 14-15 depend from claim 11. Claims 31-32 depend from claim 28, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 11. Accordingly, Applicant respectfully requests that the rejection of claims 14-15 and 31-32 be withdrawn for at least the same reasons as those presented above in relation to claim 11.

Applicant also presents the following additional reasons why claims 14 and 31 are allowable. Claim 14 recites "means for receiving a parameter e_x from the base station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal." Claim 31 recites that "the receiver also receives a parameter e_x from the base station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal." Applicant respectfully submits that the cited references do not teach or suggest this claimed subject matter.

The Examiner correctly acknowledges that Aoyama does not teach or suggest this claimed subject matter. See Office Action, page 5. However, the Examiner asserts that this claimed subject matter is taught by page 10, lines 20-25 of Farlow. See id. Applicant respectfully disagrees. As discussed above, the cited portion of Farlow refers to "generat[ing] commands for a remote unit to establish values for parameters." However, the "parameters"

referred to by Farlow do not "represent[] the portion of the resource allocated to the dedicated reference signal," as recited in claims 14 and 31. Rather, the "parameters" referred to by Farlow "control the selective insertion of training sequences in at least one subsequent time slot." Farlow, page 10, lines 21-22.

In addition, as discussed above, Applicant respectfully disagrees with the Examiner's assertion that "this modification is a necessity." Office Action, page 5. It is not necessary that the "remote station ... receive[s] a parameter e_x from the base station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal," as recited in claims 14 and 31. For example, the base station and the remote station may agree on some implicit rules for determining the parameter e_x.

In view of the foregoing, Applicant respectfully submits that claims 14 and 31 are allowable. Accordingly, Applicant respectfully requests that the rejection of claims 14 and 31 be withdrawn.

IV. Claims 9-10, 16-17, 26-27, and 33-34 Rejected Under 35 U.S.C. § 103(a)

Claims 9-10, 16-17, 26-27, and 33-34 stand rejected under 35 U.S.C. § 103(a) based on Aoyama in view of U.S. Patent No. 6,904,081 to Frank (hereinafter, "Frank"). Applicant respectfully traverses.

Claims 9-10 depend from claim 1. Claims 26-27 depend from claim 18, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 1. Accordingly, Applicant respectfully requests that the rejection of claims 9-10 and 26-27 be withdrawn for at least the same reasons as those presented above in relation to claim 1.

In addition, Applicant presents the following additional reasons why claims 9 and 26 are allowable. Claim 9 recites "means for computing the coefficients of the L-tap linear equalizer using a least squares estimation method over n chips of the common reference signal." Claim 9 also recites "means for receiving a parameter $\frac{L-1}{n}$ from the remote station." Claim 26 recites that "a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L-tap linear

equalizer." Claim 26 also recites that "the receiver also receives a parameter $\frac{L-1}{n}$ from the remote station." Applicant respectfully submits that the cited references do not teach or suggest this claimed subject matter.

The Examiner correctly acknowledges that Aoyama does not teach or suggest this claimed subject matter. See Office Action, pages 6, 8-9. However, the Examiner asserts that this claimed subject matter is taught by col. 4, lines 34-59 of Frank. Id. Applicant respectfully disagrees.

The cited portion of Frank states:

> Referring to FIG. 3, a receiver 300 includes shift register 302, correlator 304, a filter 306, a matched filter 308, an adaptive MMSE equalizer 310 and an adaptation algorithm process 312. A received, preconditioned signal 314 is sampled at a suitable integer multiple n of the chip rate, such as twice the chip rate, and shifted into the shift register 302 n samples at a time. Each of the n samples (not individually identified) from the shift register 302 is despread using the spreading sequence by a despreader 316 to provide n respective despread samples 318. The despread samples are then respectively correlated within correlator 304 to provide a correlation vector x^k, having elements x^k_1, x^k_2, ... , x^k_L, where L is the number of equalizer taps. The correlation vector x^k is provided to the adaptation algorithm 312, which generates the coefficients f^k, having elements f^k_1, f^k_2, ... , f^k_L, for MMSE equalizer 310. The coefficients f^k may be determined using a least mean square "LMS", recursive least square "RLS", or multi-stage Weiner adaptation, and as described in the afore-mentioned U.S. Pat. No. 6,175,588 they are a function of the correlation vector x^k and the error signal e^k, described below. The coefficients f^k may be updated every N chips, or as otherwise suitably determined. Other suitable adaptation algorithms may be employed depending on the desired output of the MMSE equalizer 310.

Frank, col. 4, lines 34-59. Thus, the cited portion of Frank refers to sampling a "received, preconditioned signal 314 ... at a suitable integer multiple n of the chip rate." The cited portion of Frank also refers to "L ... equalizer taps." The cited portion of Frank also refers to "determin[ing]" "[t]he coefficients f^k ... for MMSE equalizer" "using a least mean square" method.

However, the cited portion of Frank does not teach or suggest that the parameter $\frac{L-1}{n}$ is "receiv[ed] ... from the remote station," as recited in claims 9 and 26. Although Frank refers to

sampling a signal at "a … multiple n of the chip rate" and also to "L … equalizer taps," Applicant cannot find any part of Frank which teaches or suggests how n or L are determined. Frank certainly does not teach or suggest "receiv[ing] … $\frac{L-1}{n}$ from the remote station," as recited in claims 9 and 26.

In view of the foregoing, Applicant respectfully submits that claims 9 and 26 are allowable. Accordingly, Applicant respectfully requests that the rejection of claims 9 and 26 be withdrawn.

Claims 16-17 depend from claim 11. Claims 33-34 depend from claim 28, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 11. Accordingly, Applicant respectfully requests that the rejection of claims 16-17 and 33-34 be withdrawn for at least the same reasons as those presented above in relation to claim 11.

In addition, Applicant presents the following additional reasons why claims 16 and 33 are allowable. Claim 16 recites "means for computing the coefficients of an L-tap linear equalizer using a least squares estimation method over n chips of the common reference signal." Claim 16 also recites "means for transmitting a parameter $\frac{L-1}{n}$ to the base station." Claim 33 recites that "the training component uses a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L-tap linear equalizer." Claim 33 also recites that "the transmitter also transmits a parameter $\frac{L-1}{n}$ to the base station." Applicant respectfully submits that the cited references do not teach or suggest this claimed subject matter.

The Examiner correctly acknowledges that Aoyama does not teach or suggest this claimed subject matter. See Office Action, pages 7-8, 10. However, the Examiner asserts that this claimed subject matter is taught by col. 4, lines 34-59 of Frank. See id. Applicant respectfully disagrees. As discussed above, the cited portion of Frank does not teach or suggest that the parameter $\frac{L-1}{n}$ is "transmit[ted] … to the base station," as recited in claims 16 and 33. Although Frank refers to sampling a signal at "a … multiple n of the chip rate" and Frank also refers to "L … equalizer taps," Applicant cannot find any part of Frank which teaches or

suggests how n or L are determined. Frank certainly does not teach or suggest a "remote station" "transmit[ting] … $\frac{L-1}{n}$ to the base station," as recited in claims 16 and 33.

Applicant also presents the following additional reasons why claims 17 and 34 are allowable. Claim 17 recites "means for computing the coefficients of an L-tap linear equalizer using a least squares estimation method over n chips of the common reference signal." Claim 17 also recites "means for agreeing with the base station about a fixed value for the parameter $\frac{L-1}{n}$." Claim 34 recites that "the training component uses a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L-tap linear equalizer." Claim 34 also recites that "the remote station is configured to agree with the base station about a fixed value for the parameter $\frac{L-1}{n}$." Applicant respectfully submits that the cited references do not teach or suggest this claimed subject matter.

The Examiner correctly acknowledges that Aoyama does not teach or suggest this claimed subject matter. See Office Action, pages 8, 10-11. However, the Examiner asserts that this claimed subject matter is taught by col. 4, lines 34-59 of Frank. See id. Applicant respectfully disagrees. As discussed above, the cited portion of Frank does not teach or suggest that the "remote station … agree[s] with the base station about a fixed value for the parameter $\frac{L-1}{n}$," as recited in claim 17. Frank also does not teach or suggest that "the remote station is configured to agree with the base station about a fixed value for the parameter $\frac{L-1}{n}$," as recited in claim 34. Although Frank refers to sampling a signal at "a … multiple n of the chip rate" and Frank also refers to "L … equalizer taps," Applicant cannot find any part of Frank which teaches or suggests how n or L are determined. Frank certainly does not teach or suggest a "remote station" and a "base station" "agree[ing] … about a fixed value for the parameter $\frac{L-1}{n}$," as recited in claims 17 and 34.

In view of the foregoing, Applicant respectfully submits that claims 17 and 34 are allowable. Accordingly, Applicant respectfully requests that the rejection of claims 17 and 34 be withdrawn.

V. Conclusion

Applicant respectfully submits that the present application is now in condition for allowance. If there are any remaining issues preventing allowance of the pending claims that may be clarified by telephone, the Examiner is requested to call the undersigned.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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